REMARKS

Claims 29 to 35 were rejected as anticipated under 35 U.S.C. 102 (b) by Frederick, Jr. (US 3,880,028).

It is well established that each and every limitation of a claimed invention **must** be disclosed in a single prior art reference in order to be able to reject the claimed invention under 35 U.S.C. 102 (b) based on the disclosures in the single prior art reference. See M.P.E.P. 2131 and also the opinion in ***In re Bond***, 15 U.S.P.Q. 2nd 1566 (Fed. Cir. 1990).

Furthermore the C.C.P.A. has said:

> "Simply stated, a prior publication or patent description will be considered as anticipatory when its disclosure is at once **specific and enabling** with regard to the particular subject matter at issue. In effect, a prima facie case is made out whenever a reference is shown to contain a disclosure which is **specific as to every critical element** of the appealed claims." ***In re Wilder***, 166 U.S.P.Q. 545, 548 (C.C.P.A. 1970). [Bold face is our addition to the quotation].

It is respectfully submitted that Fredrick, Jr. does **not** establish a *prima facie* case of anticipation of independent method claim 29 or independent method claim 34 under 35 U.S.C. 102 (b), because Fredrick, Jr. does not

disclose or even suggest <u>each and every limitation</u> set forth in the aforesaid claims.

It is respectfully submitted that paragraph 2 of the <u>final</u> Office Action does not contain a reasonably clear and logical explanation of the reasons for rejecting claims 29 to 35 as anticipated as required by 35 U.S.C. 132 (a) and M.P.E.P. 706. The same is true of the reasons for rejecting the previously pending claims as anticipated by Fredrick, Jr. in the Office Action dated October 7, 2008.

35 U.S.C. 132 (a) is as follows:

"(a) Whenever, on examination, any claim for a patent is rejected, or any objection or requirement made, the Director shall notify the applicant thereof, <u>stating the reasons for such rejection</u>, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of his application; and if after receiving such notice, the applicant persists in his claim for a patent, with or without amendment, the application shall be reexamined." Underlining for emphasis is ours

M.P.E.P. 706 states as follows:

"After the application has been read and the claimed invention understood, a prior art search for the claimed invention is made. With the results of the prior art search, including any references provided by the applicant, the patent application should be reviewed and analyzed in conjunction with the state of the prior art to determine whether the claims define a useful, novel, nonobvious, and enabled invention that has been clearly described in the specification. The goal of examination is to <u>clearly articulate any rejection</u> early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity. The examiner then reviews all the evidence, including arguments and evidence responsive to any rejection, before issuing the next Office action." [underlining added for emphasis]

Unless the reasons for the anticipation rejection are clearly stated it is difficult to point out flaws in the reasoning or present evidence to overcome the *prima facie* case.

Paragraph 2 on pages 2 to 4 of the final Office Action merely states two methods that Fredrick, Jr. *allegedly* discloses. The first method is recited in relation to applicants' independent claim 29 and the second method is recited in relation to applicants' independent claim 34. However the reader of the Office Action apparently is supposed to guess how these alleged disclosures of methods for cutting a continuously moving glass sheet relate to applicants' claims 29 and 34. It is respectfully submitted that the written reasons for the anticipation rejection should be clarified and that <u>the features and limitations in the various claim steps of applicants' claims 29 and 34 that are taught by Fredrick, Jr. should be clearly pointed out *with a citation of the location of the disclosure* of those features and limitations in the specification of the US Patent issued to Fredrick, Jr</u>.

Furthermore claims 29 to 35 are new claims with new limitations, which were described in the first section of the REMARKS on page 6 of the amendment dated February 4, 2009. It is respectfully submitted that rebuttal of the applicants' argumentation against the anticipation rejection in the final Office Action should be reconsidered in view of the new limitations that were added to claims 29 and 34, which were not present in claims 24 and 22 respectively.

For the purposes of the following argumentation to overcome the anticipation rejection of claim 29, it will be *assumed* that the Office Action *alleges* that steps a) to g) of the first method recited in the Office Action are disclosed by Fredrick **and** are in fact the steps a) to g) of claim 29 or *alleges* that there is no real difference between the steps a) to g) recited in the Office Action and those of claim 29. Similarly for claim 34 it will be *assumed* that the Office Action *alleges* that steps a) to f) of the second method recited in the Office Action are disclosed by Fredrick **and** also *alleges* that there is no real difference between the steps a) to f) recited in the Office Action for the second method and those of claim 34.

The step d) recited in the Office Action in relation to claim 29 is as follows: "measuring thickness of the glass". However this step is not the same as step d) of applicants' claim 29. Step d) of claim 29 is: "measuring said inhomogeneous thickness distribution across the glass sheet to determine said different thickness in said different regions of the glass sheet".

Step d) of applicants' claim 29 contains more limitations than the alleged step d) of Fredrick, Jr. in the Office Action. One skilled in the glass arts expects the wording "measuring the thickness of the glass sheet" to mean measuring an average or overall thickness of the glass sheet. This is quite different from accurately measuring the thickness of the glass sheet as a function of position across the glass sheet from one side of the glass sheet to the other in order to accurately determine the differences in thickness in different regions as a

function of position from one edge of the glass sheet.

It is considerably more difficult to measure the thickness variations across a glass sheet than to measure an overall thickness because of the typically small size of the thickness variations. For example, the US Patent of Bier, which is of record in the present application, teaches that variations of a few thousandths of an inch typically occur in glass sheets with a thickness of 2 to 10 mm in column 1, lines 40 to 45. Thus for a glass sheet with a thickness of 2 to 10 mm this amounts to a variation of less than about 0.1 mm, or from 5 % to 1 %.

It is not physically reasonable to assert that such small variations in glass sheet thickness would affect the sound intensity generated by a scoring tool as it crosses the glass sheet and cuts a fissure, especially since thickness is only one factor affecting the generated sound intensity. The sound pickup 30, 41 of Fredrick, Jr. would not have sufficient resolution as a detector to detect variations in the thickness of a glass sheet because the speed of sound in glass is much faster than in air, which corresponds to an approximate theoretical resolution on the order of 11 cm for the sound pickup detector 41 operating with the ultrasonic frequencies of the pickup of Fredrick, Jr. (see column 3, lines 20 to 25 and lines 43 to 53, and fig. 2 of Fredrick, Jr.).

Furthermore the final Office Action has failed to point out the location of the disclosure in Fredrick Jr. that teaches applicants' step d of claim 29, namely the disclosure that teaches measuring the thickness variations across the glass sheet. The Office Action only alleges that Fredrick, Jr. teaches measuring thickness generically, but Fredrick, Jr. does not even disclose a method in which

average or overall thickness of the glass sheet is measured. As far as applicants can determine, Fredrick, Jr. does not disclose anything regarding measurement of thickness differences or variations across the glass sheet. E.g. there are no examples that disclose a measured thickness profile or measurement of thickness.

The term "thickness" of the glass sheet is only mentioned once in column 5, lines 5 to 10, as one factor that affects the intensity of the sound waves measured by the sound pickup apparatus 30, 34 (column 2, line 53, to column 3, line 25), which measures the intensity of the sound waves that are produced by scoring the glass sheet during formation of the fissure. However Fredrick Jr. teaches that the intensity of the sound waves depends on several other factors besides thickness including properties of the scoring tool, such as sharpness (column 4, lines 38 to 44); properties of the glass that is scored, such as the hardness of the glass surface and/or the annealing profile (column 2, lines 3 to 8, abstract); and the speed of the scoring tool (column 5, lines 16 to 22). The variations in the sound signal contemplated by Fredrick, Jr. due to the thickness changes would most likely be those changes when the process conditions are changed so that a glass sheet of a different thickness is produced, for example when a change is made from a thin sheet of 1 mm or less to a thick sheet of 8 mm.

The pressure applied to score the glass sheet during scoring is varied and controlled according to the intensity of the sound waves and nothing else according to claim 8. The Fredrick reference teaches varying the pressure

applied by the scoring to "maintain a predetermined sound level" in order to provide "uniform quality" according to column 1, last line, to column 2, line 2, of Fredrick, Jr. Column 4, lines 28 to 36, especially lines 35 to 36, of Fredrick, Jr. teaches that the pressure on the scoring tool is adjusted to keep the sound level **constant**.

Note that applicants' claimed method of claim 29 (step e) is limited to adjusting the pressure or force applied to the glass sheet "during the moving of the cutting tool across the moving glass sheet to form said fissure". In other words, the applicants' claimed method involves adjusting the cutting force during formation of a single fissure as a function of differences or variations in the glass sheet thickness as the cutting tool moves across the glass sheet.

Since the force applied to the glass sheet as the cutting tool moves across the glass sheet causes friction between the cutting tool and the material of the glass sheet, the frictional force increases as the applied force is increased. One skilled in the art would expect that as the frictional force increases that the sound level would increase (The classic illustration is the sound produced by dragging the fingers across a blackboard or other rough surface). Fredrick, Jr. confirms this theoretical relationship at column 4, lines 31 to 33, where this reference teaches the following:

> **"In general, higher pressures of the scoring tool are found to produce higher sound level readings."**

According to this principle small variations in thickness of the glass sheet would have no effect on the sound intensity generated during a scoring of a glass sheet

to form a single fissure. The sound intensity would vary with the frictional force between the glass sheet material and the cutting tool, which increases with applied pressure. Fredrick Jr. teaches varying the applied pressure to maintain the sound level constant when the optimum scoring conditions are found to account for changes in the process conditions, for example in the sharpness of the cutting tool (when a new cutting tool is installed the sound of the sharper new tool will be greater unless the cutting pressure is reduced). Similarly if the speed of the cutting tool is changed, the pressure during the scoring should be changed.

Regarding step e) of claim 29 the Fredrick reference appears to only teach that once the optimum scoring conditions are determined during scoring of a single fissure across the glass sheet the pressure of the scoring tool on the glass sheet is adjusted <u>to keep the sound level constant</u> (column 4, lines 28 to 38). It does not teach that the pressure of the scoring tool is adjusted according to the thickness variations in different regions of the glass sheet as the scoring tool makes a single traverse of the glass sheet. The sound level that is produced may depend on the overall thickness, but not small variations in the thickness in different regions, of the glass sheet. The reference does not state whether or not they mean an average or overall thickness or the thickness of the glass sheet as a function of position on the glass sheet in column 5, lines 5 to 7, but considerations regarding spatial resolution that is possible with their sound pickup operating the ultrasonic range suggest that it is the former, not the latter.

Furthermore other factors mentioned by Fredrick, Jr. in column 5 would interfere with an accurate determination of the thickness from the sound level as a function of position on the glass sheet with a spatial resolution of a mm or cm. These factors include the location of the sonic pickup 30 (column 5, line 10, of Fredrick, Jr.). The sound intensity detected when the sonic pickup 30 is in the edge regions of the glass sheet would be somewhat different than when it is located in the center of the glass sheet, other things including the thickness being equal. These other instrumental factors would make it impossible to accurately determine the dependence of the thickness of the glass sheet on position and to accurately measure variations in thickness in different regions, when those variations are typically on the order of a few percent of the average or overall thickness of the glass sheet.

With respect to claim 34 Fredrick Jr. does <u>not</u> disclose step c), continuously measuring glass sheet thickness as the cutting tool moves across the glass sheet. The sonic pickup 30 only measures the sound level produced by scoring. Fredrick Jr. does **not** disclose that it can accurately measure thickness differences of different regions of the glass sheet while forming a single fissure.

If the USPTO disagrees with the aforesaid arguments, the location in Fredrick Jr. where it states that the thickness variations or differences or the thickness as a function of position on the glass sheet can be accurately determined with their sonic pickup 30 and evaluating devices should be pointed out. Fredrick Jr. only teaches that the pressure should be adjusted according to

the sound intensity measured, but the sound intensity not only depends on the overall thickness of the glass sheet according to Fredrick Jr., but also it depends on the annealing state, hardness of the glass sheet and various instrumental factors such as the position of the pickup in relation to the edges of the glass sheet. Temperature gradients across the glass sheet would affect the results because they would affect the hardness. Furthermore as noted above the spatial resolution of the sonic detector does not appear to be sufficient to determine thickness as a function of position to an accuracy of better than 1 %; it appears to be responsive only to overall or average thickness.

Step f) of claim 34 is not the same as the supposed step f) on page 4 of the Office Action because the Office Action fails to state that the variable cutting forces applied at corresponding points of contact vary according to the thickness of the glass sheet according to said respective thickness values at the points of contact. The thickness according to step f) on page 4 of the Office Action could be an overall thickness of the glass sheet. Like Fredrick Jr. the Office Action does not distinguish between varying the cutting force during formation of a single fissure across the glass sheet according to thickness variations as the sheet is traversed and varying the cutting force when a process change is made from producing a sheet of a thickness of 1 mm to a thickness of e.g. 8 mm. Steps d) and f) of applicants' claim 34 are equivalent to stating that the cutting force in a region where the glass sheet is thicker will be increased in relation to the cutting force that is applied in a region where the glass sheet is thinner.

Also Fredrick Jr. does not enable one skilled in the art to practice the invention as it is now claimed in claim 29 or 34 because Fredrick Jr. does not disclose how to measure small variations in the thickness of a glass sheet as a function of position across the glass sheet with a sonic pickup that traverses the glass sheet.

Since it is not enabling the reference cannot anticipate. Such variations in thickness would be best measured with an optical probe, not a sonic probe.

The rebuttal on page 5 of the Office Action states that the previous argument that the sonic detector cannot measure thickness is incorrect because column 5, lines 5 to 10, teaches that the sound intensity level depends on the thickness of the glass. This rebuttal does not consider the fact that the applicants' claims do not state that the applied cutting force is varied according to the overall or average thickness of the glass sheet, but instead state that the cutting force is varied during the cutting or forming of a single fissure or single traversal of the cutting tool across the glass sheet according to the small differences or variations in the thickness of the glass sheet in different regions encountered as the cutting tool traverses the glass sheet. The sound intensity level from the sound pickup 30, 41 would not significantly depend on variations of a few percent in the thickness of the glass sheet, but such small changes in the glass sheet thickness can lead to considerable variations in the depth of the fissure or score according to column 1 of the Bier US Patent. Fredrick, Jr does not disclose changing the pressure or applied cutting force during forming a single score by a single

traversal of the cutting tool according to the variations or differences in the glass sheet thickness during the single traversal of the glass sheet.

Also the Fredrick reference does not teach that they succeeded in accounting for the several other factors affecting the sound signal intensity so that they could obtain measured glass sheet thickness variations on the order of a few percentages of the thickness as a function of position across the glass sheet with their apparatus for measuring the sound intensity due to the cutting or scoring.

Briefly, although the reference teaches that the sound intensity depends on the thickness among several other factors, it does not teach that the sound signal intensity as the pickup 30, 41 traverses the glass sheet is proportional to the thickness of the glass sheet at the position of the sonic probe making the sound intensity measurement. The teaching at column 5 should be interpreted broadly as teaching that the overall sound intensity depends on the overall thickness of the glass sheet so that as the probe traverses a sheet of a given overall thickness there is no change in the sound intensity level, but if the process is changed from making a glass sheet with a 1 mm thickness to another different overall thickness, e.g. 5 mm, the sound level would change.

In summary, Fredrick, Jr. does not disclose:

(1) a method of cutting a continuously moving glass sheet in which the scoring or cutting is controlled on the basis of information regarding the comparatively small variations or differences in thickness of the glass sheet as

the scoring or cutting tool moves across the glass sheet from thicker to thinner regions and vice versa; the reference only discloses that the scoring or cutting is controlled according to the level of the sound due to cutting and does not state that the sound intensity level depends on thickness **variations or differences** as the cutting tool traverses the glass sheet of a given overall thickness;

(2) Fredrick, Jr. does not disclose measuring thickness of the glass sheet, only measuring the sound intensity due to cutting the glass sheet with a cutting tool; the sound intensity depends on a number of instrument parameters as well as thickness during the transversal of the cutting tool across the glass sheet so that a change in the sound intensity level would not necessarily be due to a change of the thickness of the glass sheet, but could be due to another factor such as the physical location of the sound pickup 30 (center vs. edge); and

(3) adjusting the cutting force <u>during formation of a **single** fissure or crack as the cutting tool traverses the cutting sheet</u> so that the cutting force is smaller at certain positions or in certain regions where the sheet is thinner and so that the cutting force is greater at certain positions or in certain regions where the sheet is thicker (step e of claim 29 and steps d and f of claim 34); this latter limitation is to be distinguished from changing the cutting force when the apparatus that generates the glass sheet is switched from e.g. thin glass sheets of 1 mm thickness to thick glass sheets of 10 mm thickness and *vice versa*.

The statue (35 USC 102) requires that **each and every limitation** must be disclosed in a prior art reference for a valid anticipation rejection based on the

reference. The above differences between the methods claimed in claims 29 and 34 and the disclosures of Fredrick, Jr. should be reconsidered in view of that principle. Particularly Fredrick, Jr. does not teach measurement of the thickness differences or variations in different regions of the glass sheet as the cutting tool makes a single traversal of the cutting sheet and forms a single fissure.

Of course the dependent claims should not be rejected under 35 U.S.C. 102 (b) because they depend on claims 26 and 34, which are not anticipated.

For the foregoing reasons withdrawal of the rejection of claims 29 to 35 as anticipated under 35 U.S.C. 102 (b) by Fredrick, Jr. is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549-4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,

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